Environmental Assessment for Construction of Pullouts and other Safety Improvements between Mile 73 and Mile 86 on the Denali Park Road

NPS Response to Questions submitted by Denali Citizens Council

Question 1: *When was the most recent inventory of road widths and conditions in the project area, and is that inventory available for public viewing? It was mentioned that a movie that was done in 2002. Has an inventory of widths been taken since then?*

> **NPS response: Video road inventories were completed in 2002 and 2007. This process documents a visual inventory of the character and condition of the park road, but does not provide specific road width measurements. Footage from the 2007 inventory was shown at the public scoping meeting for this project and is available for additional viewings.**
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> **We have requested a method be developed for measuring road width in future video road inventories, but this capacity does not yet exist. For this project FHWA surveyed the project area, including existing road widths.**

Question 2: *What are the minimum and maximum "roadway widths" in the project area right now?*

> **NPS response: In the project area road width varies between fourteen and twenty-four feet. Due to structural issues, not all of that road width is useable road surface.**

Question 3: *Is variability in width a challenge for safe driving in this section?*

> **NPS response: Road width variability becomes a safety concern when the transition between road widths is too abrupt. Transitions are addressed in the approved *2007 Road Design Standards* (RDS) for the Denali Park Road.**

Question 4: *If the edges of the road could be made more reliable, would variability in width be less of a problem?*

> **NPS response: Road width variability is not a safety concern as long as there are appropriate transitions between changing road widths, stable road edges, and easily discernable and reachable passing pullouts.**
>
> **Key issues for this project include unstable road edges and lack of safe pullout widths for passing vehicles. Guidance from the RDS is being followed to keep a variable road width in this section to retain an important aspect of road character.**

Question 5: *Has the road crew been addressing the "hour-glassing" around culverts, mentioned as a problem during conversations about the Design Standards? How has this been addressed during routine maintenance? Will the project directly address it?*

NPS response: The "hour-glassing" effect that occurs around culverts is being addressed during culvert replacement efforts. This project will address "hour-glassing" where it exists within the project area.

Question 6: *At this point in time, is hour-glassing a significant problem in the project area?*

NPS response: "Hour-glassing" around culverts is not a primary reason the project is being done, but will be addressed within the project area.

Question 7: *Intervisibility of pullouts - the project has the intention of establishing this standard for mile 79-84 when complete. This intervisibility standard comes from the Final Road Design Standards of 2007, is that right?*

NPS response: The intervisibility standard being used for this project comes from guidance in the RDS and the professional expertise of National Park Service and Federal Highway staff members who participated on an interdisciplinary planning team.

Question 8: *How much of the road past Teklanika conforms to the intervisibility standard now?*

NPS response: Many areas between the Teklanika Bridge and the Eielson Visitor Center have intervisible pullouts that conform to the standards, including some in the Polychrome area. We do not have a complete inventory of intervisible pullout needs for the entire length of the park road. We are working on the high priority areas identified in the Entrance Area DCP/EIS.

Question 9: In areas of the road where pullouts are not intervisible, what other factors determine driver safety?

NPS response: The primary safety factor is safe road width for meeting, yielding and passing. Secondary factors such as driver judgment, structural strength and road edge stability play an increasing role as road width narrows.

Question 10: *Of the 50 passing pullouts planned in the core area, Mile 79-84, what percentage will be located on the spill slope, and what percentage on the backslope of the road?*

NPS response: Approximately 20% will be located on the spill/fill slope and 50% on the backslope of the road and another 30% will have components of both. Additional spill/fill slope work will occur at some of the culvert replacement areas. More importantly, every effort has been made to use ridge noses and lobes, both on the inside and outside of the road to minimize disturbance. Of the 50 passing

pullouts that would be formalized in this project, most of them will be on top of existing wide spots.

Question 11: *Soft shoulder issues - of the accidents along the road west of Eielson, what percentage of them occurred during passing situations?*

NPS response: Between 1991 – 2004, data for the road west of Eielson reflects 71% of all accidents/incidents occurred during vehicle passing situations.

Question 12: *What percentage when a lone vehicle lost a wheel on a soft shoulder?*

NPS response: That information is unknown.

Question 13: *In your inventory of accidents, what percentage involved lone vehicles?*

NPS response: 29% were single vehicle accidents.

Question 14: *What percentage involved more than one vehicle?*

NPS response: 71% of the accidents involved more than one vehicle.

Question 15: *Could the sites of these accidents be marked on the EA's map?*

NPS response: The exact location of each incident is not known but referenced by a general section with approximated mileage of the park road. The high percentage of accidents that occurred in the project area could be shown on a map, but would not be reflective of a particular pullout, corner, or other specific location.

Question 16: *Compacted gravel lifts - are these planned only for the section between MP 73 and 79, in areas that will then become pullouts? On those sections of the road where no pullouts will be constructed, are there any plans for shoulder stabilization? Are there data to show that this method of excavation and placement of gravel "lifts" is effective for strengthening spill slope edge in low temperature, ice laden soils?*

NPS response: Compacted gravel lifts are a standard road construction practice. Data was available to design engineers regarding the variety of soils that could be anticipated during construction.

Question 17: *Are there angles of spill slope where gravel lifts are more and less effective?*

NPS response: Gravel lifts are more effective at all slope angles than sliver fills. The flatter the spill slope the more effective and stable the road edge. General road designs call for up to a 4:1 angle depending on use, speed, traffic quantities and other factors. The RDS calls for a 1.5:1 to preserve the road character, minimize resource disturbance and structure width.

Question 18: *Is manufactured material (wedges, textiles, etc.) potentially helpful in stabilizing edges? If so, why is it not mentioned or planned? Expense?*

> **NPS response: In general, visible slope retaining structures are used only when necessary on the park road since their use may alter existing road character. In this project we have not found it necessary to use fabric during fill/spill slope replacement, and will use a minimal number of gabion structures to protect culverts. The RDS indicates a preference for the use of geotechnical products as fillers, binders and palliatives since they reduce the demand for extraction of mineral material resources within the park.**

Question 19: *Are there drainage issues that could arise from the large excavations in the spill slope?*

> **NPS response: Large excavations within fill slopes on roads constructed from native material, such as the park road, actually results in *improving* drainage and road structure due to the importation and placement of materials meeting engineering specifications.**

Question 20: What percentage of the areas where gravel lifts are planned will removal of alders that currently "stabilize" the spill slope be necessary? Alders provide significant water holding and transpiring services in soil. Is the absence of this function been accounted for in the plans?

> **NPS response: Water retention is not desirable in a road structure, and especially for structural spill slopes. Alders have long been an issue on the Wonder Lake section of the park road, not only for reducing sight distance but also because they inhibit the ability to achieve and properly maintain a safe road structure. They have also been a significant factor in creating the unstable road edge on the Wonder Lake section which has contributed to the accident/incident rate.**

Question 21: Crowning - will the net effect of this project be to reduce the current crowning angle of the road or increase it?

> **NPS response: In the project area the current crown angle will be retained since it has proven to be successful in limiting water pooling on the road surface. The chronic potholes that were present before this section was resurfaced and crowned have disappeared and the need for road maintenance has been greatly reduced.**

Question 22: Federal Highway standards v. Park Road standards. How have these two sets of standards come together in the design of this project?

> **NPS response: This project has been designed by the FHWA using the park's *Road Design Standards*. An interdisciplinary team consisting of FHWA design engineers, an FHWA engineering geologist, the park's compliance officer, the park's wilderness coordinator, the Wonder Lake grader operator and West District Roads Supervisor walked the entirety of the project area and sited every pullout, culvert**

and feature. Each project element was thoroughly discussed and agreed upon by the interdisciplinary team.

Question 23: Are there some features of federal standards that the road crew has had to reluctantly accept?

NPS response: FHWA's has been consistently professional, knowledgeable and dedicated in working with the park to bring it the product it desires while balancing the demands of many competing mandates. FHWA's designed this project using the park's *Road Design Standards* which were created with input from NPS staff.

Question 24: Would you say that engineering details are still being worked out on specific elements of the project?

NPS response: The engineering details have been finalized for this project, though we don't have the final drawings in hand. We always look for opportunities in the field to reduce project impacts during construction.

Question 25: Will the Wonder Lake section of road be "safe enough" for the design vehicle when this project is finished, or will more remain to be done?

NPS response: Since the 1990's the use of larger, forward controlled buses on this section has increased. Currently these buses travel the same direction at the same time and therefore do not regularly meet each other in yielding and passing situations. The goals of the RDS are to maintain the unique character of the park road while providing a safe road structure, which includes adequately, sized and placed yielding and passing locations. To meet the RDS goals more safety improvements may be needed for this section in the future.